

## Jorgensen, Leland

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**From:** Kalakuntla, Vamshi (ASRC)  
**Sent:** Tuesday, November 18, 2003 4:21 PM  
**To:** Jorgensen, Leland  
**Subject:** Draft prior art search strategy for 09/874128

Dear leland jorgensen,

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Vamshi Kalakuntla  
ASRC Searcher  
EIC 2600  
CPK2 3C03  
(703) 306-0254

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s white  
s better or efficien? or effective or higher or lower or more or less or greater or lesser or (save or saves or saving)(3n)  
(power or electricity or energy or charge or battery?)  
s (color or colour or red or green or blue or red()blue()green or rgb)  
s au=(Siwinski, m? or Siwinski m?)  
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## A white organic light emitting diode with improved stability

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**Abstract.** A white organic light emitting diode (OLED) has been constructed by employing a new blue material and a red dye directly doped in the blue emitting layer. For comparison, another white cell with a blocking layer has also been made. The configurations of the devices are ITO/CuPc/NPB/JBEM(P):DCJT/Alq/MgAg (device 1) and ITO/CuPc/NPB/TPBi:DCJT/Alq/MgAg (device 2) where copper phthalocyanine (CuPc) is the buffer layer, N,N'-bis-(1-naphthyl)-N,N'-diphenyl-1,1'-biphenyl-4-4'-diamine (NPB) is the hole transporting layer, 9,10-bis(3'5'-diaryl)phenyl anthracene doped with perylene (JBEM(P)) is the new blue emitting material, N-arylbenzimidazoles (TPBi) is the hole blocking layer, tris(8-quinolinolato)aluminium complex (Alq) is the electron transporting layer, and DCJT is a red dye. A stable and current independent white OLED has been obtained in device 1, which has a maximum luminance of  $14\,850\text{ cd m}^{-2}$ , an efficiency of  $2.88\text{ Lm W}^{-1}$ , Commission Internationale de l'Eclairage coordinates of  $x = 0.32$ ,  $y = 0.38$  between  $4\text{--}200\text{ mA cm}^{-2}$ , and a half lifetime of 2860 h at the starting luminance of  $100\text{ cd m}^{-2}$ . Device 1 has a stability more than 50 times better than that of device 2.

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